

Application No. 10/026,016  
Statement of the Substance of the Interview  
Reply to Interview Summary mailed August 11, 2004

### AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously Presented) A vertical cavity surface emitting laser (VCSEL), comprising:

an active region further comprising at least one quantum well having a depth of at least 40 meV, wherein said depth is defined using the difference between a valence band offset and a conduction band offset, and said at least one quantum well is comprised of InGaAsSbN and includes barrier layers sandwiching said at least one quantum well; and confinement layers sandwiching said active region.

2. (original) The VCSEL of claim 1 wherein said barrier layers are comprised of GaAsP.

3. (original) The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs.

4. (original) The VCSEL of claim 2 wherein said confinement layers are comprised of AlGaAs.

5. (original) The VCSEL of claim 3 wherein said barrier layers are comprised of AlGaAs.

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6. (original) The VCSEL of claim 1 wherein said barrier layers are comprised of AlGaAs.

7. (previously presented) The VCSEL of claim 1 wherein said at least one quantum well further comprises  $> 1\%$  N.

8. (original) The VCSEL of claim 7 wherein said barrier layers are comprised of GaAsP.

9. (original) The VCSEL of claim 7 wherein said confinement layers are comprised of AlGaAs.

10. (original) The VCSEL of claim 8 wherein said confinement layers are comprised of AlGaAs.

11. (original) The VCSEL of claim 7 wherein said barrier layers are comprised of AlGaAs.

12. (original) The VCSEL of claim 9 wherein said barrier layers are comprised of AlGaAs.

13. (previously presented) The VCSEL of claim 1 wherein said at least one quantum well is up to and including 50Å in thickness.

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14. (original) The VCSEL of claim 13 wherein said barrier layers are comprised of GaAsP.

15. (original) The VCSEL of claim 13 wherein said confinement layers are comprised of AlGaAs.

16. (original) The VCSEL of claim 14 wherein said confinement layers are comprised of AlGaAs.

17. (original) The VCSEL of claim 13 wherein said barrier layers are comprised of AlGaAs.

18. (original) The VCSEL of claim 13 wherein said barrier layers are comprised of AlGaAs.

19. (previously presented) The VCSEL of claim 1 wherein said at least one quantum well further comprises  $> 1\%$  N.

20. (original) The VCSEL of claim 19 wherein said barrier layers are comprised of GaAsP.

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21. (original) The VCSEL of claim 19 wherein said confinement layers are comprised of AlGaAs.

22. (original) The VCSEL of claim 20 wherein said confinement layers are comprised of AlGaAs.

23. (original) The VCSEL of claim 19 wherein said barrier layers are comprised of AlGaAs.

24. (original) The VCSEL of claim 21 wherein said barrier layers are comprised of AlGaAs.

25. (Previously Presented) A vertical cavity surface emitting laser (VCSEL), comprising:  
an active region further comprising at least one quantum well having a depth of at least 40 meV, wherein said depth is defined using the difference between a valence band offset and a conduction band offset, and said at least one quantum well is comprised of InGaAsSbN and includes barrier layers sandwiching said at least one quantum well; and AlGaAs confinement layers sandwiching said active region.

26. (Previously Presented) The VCSEL of claim 25 wherein said barrier layers are comprised of GaAsP.

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27. (Previously Presented) The VCSEL of claim 25 wherein said barrier layers are comprised of AlGaAs.

28. (Cancelled)

29. (Previously Presented) The VCSEL of claim 25 wherein said at least one quantum well further comprises  $> 1\%$  N.

30. (Previously Presented) The VCSEL of claim 29 wherein said barrier layers are comprised of GaAsP.

31. (Previously Presented) The VCSEL of claim 29 wherein said barrier layers are comprised of AlGaAs.

32. (original) The VCSEL of claim 25 wherein said quantum well is up to and including 50 Å in thickness.

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33. (Previously Presented) A vertical cavity surface emitting laser (VCSEL), comprising:
- an active region further comprising at least one quantum well having a well depth of at least 40 meV, wherein said depth is defined using the difference between a valence band offset and a conduction band offset, and said at least one quantum well is comprised of InGaAsSbN and includes barrier layers sandwiching said at least one quantum well; and
- AlGaAs confinement layers sandwiching said active region;
- wherein said quantum well contains greater than 1 % N.
34. (original) The VCSEL of claim 33 wherein said quantum well is up to and including 50Å in thickness.